



A U.S. Department of Defense Information Analysis Center (IAC) sponsored by the Defense Technical Information Center (DTIC)

## AN OVERVIEW OF THE BIOLOGICAL WEAPONS CONVENTION: PROGRESS AND PROSPECTS

By Thomas R. Dashiell

### BACKGROUND



It has been slightly over two decades since the Biological and Toxin Weapons Convention (BWC) entered into force. At that time the BWC was considered a disarmament success story which banned a whole category of weapons systems. Over the intervening years, however, there have been numerous questions about its effectiveness, especially its lack of means to demonstrate compliance.

The Second Review Conference (Second Revcon) of States Parties, held in 1986, in an effort to reduce the occurrence of ambiguities, doubts and suspicions and to improve international cooperation in peaceful biological activities, adopted voluntary measures to strengthen confidence in treaty compliance and to help deter violations.

At the Third Review Conference (Third Revcon), held in 1991, there were continuing concerns of proliferation, possible noncompliance of some parties and the rapid and significant advances in biotechnology. These concerns were further reinforced by the view that the voluntary confidence building measures (CBM) adopted at the Second Revcon had had inadequate participation by States Parties and a more rigorous regime was needed to alleviate the concerns. Thus, the existing CBMs were reaffirmed and additional voluntary CBMs were developed at the Third Revcon to meet perceived deficiencies. Additionally, the Revcon mandated the convening of an Ad Hoc Group of Governmental Experts to identify and examine potential verification measures from a scientific and technical standpoint.

The Ad Hoc Group of Government Experts, also known as VEREX, held four sessions between March 1992 and September 1993 under the chairmanship of Ambassador Tibor Toth of Hungary. They completed their work and submitted a consensus report to all States Parties. The experts "concluded that potential measures as identified and evaluated could be useful to varying degrees in enhancing confidence, through increased transparency, that States parties were fulfilling their obligations under the BWC". No single approach could fulfill the mandate criteria for an effective stand-alone measure. This is primarily due to the dual-use nature of nearly all biological warfare related facilities, equipment and materials and the huge overlap between prohibited and permitted purposes. Nevertheless, the Ad Hoc Group considered that from the scientific and technical standpoint some of the measures, applied either singly or in combination, had the potential to strengthen the BWC and would also contribute to strengthening the effectiveness and improving the implementation of the Convention.

As provided in the mandate, a majority of States Parties called for a Special Conference to consider the experts' report. The Special Conference convened in Geneva for two weeks in September 1994, where 79 States Parties participated. The Special Conference adopted a mandate for an Ad Hoc Group, open to all States Parties, to consider "appropriate measures, including possible verification measures," and to incorporate them into a legally binding instrument. The mandate of this new Ad Hoc Group requires that in drafting this instrument, the group shall consider definition of terms and objective criteria with respect to specific measures, such as

lists of BW agents; incorporate existing and further enhanced confidence building and transparency measures into the regime; develop a system of measures to promote compliance with the BWC, including as appropriate, those discussed in the VEREX final report; and, consider specific measures designed to ensure a program for technical cooperation in the field of biotechnology for peaceful purposes. The mandate further requires the design and implementation of measures to "protect commercial proprietary information and legitimate national security needs" and to "avoid any negative impact on scientific research, international cooperation, and industrial development."

**See "An Overview of the Biological Weapons Convention: Progress and Prospects"**

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## THOUGHTS FROM THE PENTAGON



Dr. Ted Procriv, Deputy Assistant to the Secretary of Defense (Chemical and Biological Matters)

By Dr. Ted Procriv

This is the second of our quarterly updates designed to keep the Chemical and Biological Defense (CBD) community abreast of the most recent activities in the Pentagon. Our office is the Office of the Secretary of Defense (OSD) staff focal point for three major areas of importance; the DoD Chemical and Biological Defense Program, the DoD Chemical Demilitarization Program and Chemical Warfare (CW) and Biological Warfare (BW) Arms Control Programs.

### DOD CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM:



The Fiscal Year 1996 Defense Appropriation Act approved a final increase to our DoD Chemical Biological Defense request for Research, Development, Test and Evaluation funding. Our original request of \$243.0M was increased by \$20.3M. Our FY 97 request for procurement of Chemical/Biological Defense equipment, approximately \$140M, was approved for the requested amount. The program continues to receive strong Congressional support, as it is perceived as a strong contributor to warfighting capability, and supports the

Administration's high priority Counter-proliferation Program.

My staff in conjunction with Service and Joint Staff elements has begun to develop input to this year's required NBC Defense Annual Report to Congress. This report which will be the third edition, is a requirement of Public Law 103-160, the National Defense Act for FY 1994. The report will examine requirements, status of research and development programs for both medical and non-medical chemical and biological defense programs, and logistics and training issues. The final report will be submitted to the Congress in the February/March timeframe.

The Medical Management of Chemical and Biological Casualties course given four times a year jointly at Fort Detrick and the Edgewood Area of Aberdeen Proving Grounds, Maryland is a graduate level medicine education course unique in DoD. Those attending receive 46 continuing medical education credits; approximately 70 doctors, nurses and physician assistants may attend per course. During the Gulf War, modified versions of this course were being given simultaneously on three continents. It was this course and its training materials that provided the much needed instruction for our wartime health care providers. Frequently, foreign medical personnel attend to compare our training with theirs. Occasionally, nonmedical personnel such as the FBI and other DoD with a need to know attend. In the future we hope to export this course worldwide via telemedicine.

### CHEMICAL DEMILITARIZATION:



The Army has identified three technologies which warrant further review by the National Research Council (NRC) which may be capable of safely disposing of chemical agents at the bulk-only sites. These technologies were proposed by industry in response to a recent announcement in the Commerce Business Daily (CBD).

The recommended technologies and their respective vendors are electrochemical oxidation (Subsea International, Inc.), hydrocracking (ELI ECO Logic, Inc.) and molten metal (M4 Environment L.P., Inc.).

The two current technologies under investi-

gation, neutralization and neutralization followed by biodegradation, are part of the Army's research, development and test programs for alternative disposal technologies. During the course of reviewing the design packages submitted by industry, the Army also identified technologies which may be useful as post-treatment for dilute neutralized VS and mustard brine (salts). The post-treatment technologies are: super critical water oxidation (General Atomics), ultraviolet peroxide oxidation (Solarchem Environment Systems) and electron beam bombardment (High Voltage Environment Applications, Inc.).

Over the next six months, the vendors will develop and submit additional information for review including live agent test data. The National Research Council (NRC) will review these three technologies as well as neutralization and neutralization followed by biodegradation. The review, scheduled to start in Nov 1995, will be conducted by the NRC's newly-formed Alternative Technology Panel.

The current baseline incineration technology has been endorsed by the NRC as safe and effective for use in disposing of chemical agents and munitions in eight sites in the continental United States. The council recommended that the Army should continue the chemical stockpile disposal program on schedule with the baseline technology unless alternatives are developed which are safer, less costly, or more rapidly implemented without sacrifice in any of these areas. In 1994, the Army initiated an aggressive research and development Alternative Technology Program in parallel with the baseline incineration program.

The NRC recommended that the Army monitor developments in alternative technologies. The CBD announcement was part of the Army's effort to ensure that industry had an opportunity to show that alternative technologies were available that might meet the criteria for alternative technology development.

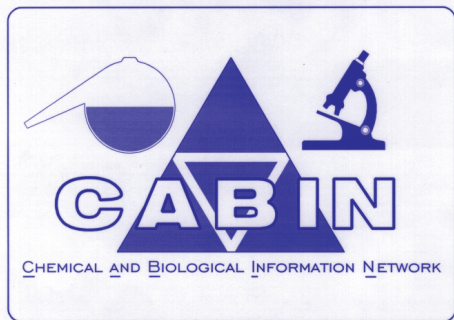
The program is presently scheduled to conduct a Defense Acquisition Board Review in October 1996 to determine whether the results from the research and development warrant proceeding to pilot testing.

See "Thoughts From The Pentagon"

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# TAT FOCUS

## Technical Transfer to Civilian Community



A chemical and biological database originally developed for the U.S. military is being transferred to civilian personnel at state and local Preparedness Divisions of the Federal Emergency Management Agency (FEMA). The Chemical and Biological Information Network (CABIN) database system initiated as a CBIAC Technical Area Task (TAT), is an automated unclassified resource capability tool used to access chemical and biological compounds and agent dissemination information. FEMA will use CABIN to complement their responsibility as the lead agency for the management of consequences from potential terrorist activities within the United States. Battelle is tasked to transfer CABIN to meet FEMA's mission requirements and provide a quality product civilian users are comfortable operating.

This database was developed to link data from different sources together for easy access to valid chemical and biological information. The database gives FEMA personnel a critical decision analysis tool at their fingertips which provides valid information quickly. Figure 1 shows CABIN's main menu screen.

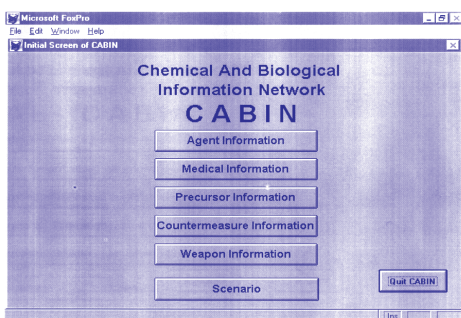


Figure 1: CABIN Main Menu and  
Query Capability

The types of information accessible in the database include:

**Agent Information:** This module provides primary agent information including agent properties, alternate agent names, and CAS registry numbers.

**Medical Information:** CABIN's medical data includes human symptoms, treatments, toxicity, diseases, and effects associated with each chemical and biological agent.

**Precursor Information:** CABIN provides the names of the precursors required to produce a particular agent. The database includes feedstock information, manufacturers, and other end uses of the precursor.

**Countermeasure Information:** This module provides decontamination procedures, prevention procedures, and protective clothing information associated with each agent.

**Weapon Information:** CABIN provides the method of agent delivery and the type of weapon which could be used.

Each database contains specific information on each of the above categories. The CABIN database also contains other pertinent chemical/ biological information critical to FEMA. In emergency situations, CABIN's scenario screen (Figure 2) can help the user identify an unknown substance based on information collected in the field. This module is designed to provide precise information quickly and easily.

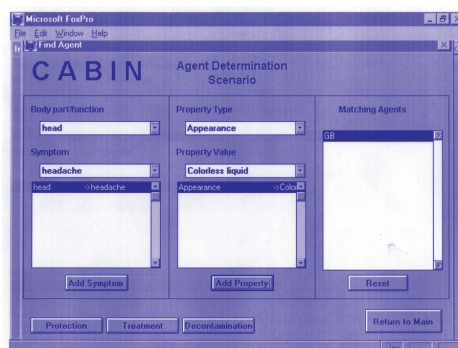


Figure 2: CABIN Scenario Screen

The database has been developed as a FoxPro application with an enhanced user interface design. The database is an executable file used in the Windows environment so no other software is required except the CABIN disks and the user manual.

## Computer Hardware Required

The system requirements for CABIN are:

- Computer: IBM compatible
- Display: VGA or better
- Processor
  - Minimum: 386/33 mhz
  - Recommended: 486/66 MHZ
- Memory: 8 Mb of RAM
- Hard Disk Space: At least 20 megabytes
- Operating System: Microsoft Windows 3.1 or higher

For further information on CABIN, contact:

Tammy Ramirez  
Tel: (614) 424-5718  
Fax: (614) 424-7312  
E-Mail: ramirezta@battelle.org  
or  
Robert Hale  
Tel: (614) 424-5149  
Fax: (614) 424-7312  
E-Mail: haler@battelle.org

## NEW NICHE ON THE NET

The CBIAC has changed the URL for accessing our homepage.



Please visit this site for information on:

- The CBIAC (General Overview).
- CBIAC Products.
- Current Awareness Products.
- Inquiry and Referral Services.
- Information Products.
- Technical Area Tasks.



## "An Overview of the Biological Weapons Convention: Progress and Prospects"

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### AD HOC GROUP ACTIVITIES



This newly formed Ad Hoc Group held a procedural meeting in Geneva, January 4 to 6, 1995, to develop a program of work and a schedule for 1995. The meeting provided some insight into how various countries viewed the urgency of strengthening the BWC. The Western Group countries pushed for several meetings whereas some non-aligned countries favored only one formal negotiating session late in the year. The ad hoc group finally compromised on a plan to hold formal sessions in Geneva from July 10 to 21 and from November 27 to December 8, 1995, and to conduct its work and adopt its decisions by consensus.

The second session, but the first substantive meeting of the Ad Hoc Group met from July 10 to 21 in Geneva under the chairmanship of Ambassador Tibor Toth of Hungary. Fifty-two State Parties participated in the work of the group. While most countries agreed that more progress was made than had been anticipated, there was an appreciation for the amount of work that remains and the very complex nature of many of the problems and issues that the group must consider in the next meetings.

At the July session, the Ad Hoc Group decided to commence its consideration of the agenda item strengthening the Convention in accordance with the mandate as it is contained in the Final Report of the Special Conference. Also the Chairman announced that, following appropriate consultations, he had appointed Friends of the Chair (FOC) to assist him in his consultations and negotiations as follows:

Definitions of terms and objective criteria;  
•Nonaligned, Dr. Ali Mohammadi (Iran)

Confidence building and transparency measures;  
•Eastern Group, Amb. Tibor Toth (Hungary)

Measures to promote compliance;  
•Western Group, Mr. Stephen Pattison (United Kingdom)

Measures related to Article X;  
•Nonaligned, Amb. Jorge Berguno (Chile)

The Ad Hoc Group held 21 meetings during the July session. Nine meetings were devoted to measures to promote compliance, seven meetings to definitions of terms and objective criteria, two meetings to measures related to Article X, and two meetings to confidence building measures. The Group agreed to consider holding two sessions of two weeks each of the Ad Hoc Group in 1996 which were provisionally scheduled for July and September. Also on the 1996 calendar will be the Fourth Review Conference and its Preparatory Committee meeting.

Each of the areas considered by the FOC's elicited considerable discussion. Measures to promote compliance represented the most critical area where both off-site and on-site measures were discussed. Of the off-site measures, declarations were proposed as the primary measure which could provide a database on areas of concern. Included in this measure could be facilities, programs, listed pathogens and agents, aerobiology, production, genetic manipulation, and equipment. This was recognized as a gray area and one that will be difficult to define. It was recognized that flexibility was needed to adapt to change. On-site measures were considered next where visits or inspections were considered as a primary measure. Visit implementation activities such as interviews, visual observation, auditing, sampling and identification, identification of key equipment and medical examinations were considered. It was recognized that only a small visiting team would be available due to the cost. Timelines for visits were not explored, nor was a mechanism for limiting visits evaluated. There are many details of each of the measures to be explored before agreement can be expected. A variety of other off-site measures evaluated in the VEREX report were also considered as well as investigation of alleged use instances. There are large differences between countries in many areas but there are

sufficient measures being considered now to formulate the major principles of a protocol.

The FOC paper on confidence building and transparency measures recognized the problems associated with further definition of terms and the use of lists in implementation of measures and concluded that further discussion of these areas is necessary. It seems obvious at this time that there will be a two-tier system developed and in place for an undetermined time which will cover signatories to the legally binding protocol separately from signatories to the BWC with the voluntary confidence building measures. This will be required to ensure that all parties adhere to at least some minimum confidence building and transparency regime.

The FOC for definition of terms and objective criteria produced a paper which developed a list of criteria for human pathogens and toxins which elicited much discussion but no agreement and a voluminous list of proposed human, animal and plant pathogens and toxins which will require much more discussion at the next session. It was recognized that individual measures may require definition which may become a function of this FOC group.

The last major area considered and discussed in an FOC paper is discussions on Article X (technology transfer and export controls). The paper considered a wide variety of issues ranging from the mandate, the need to consider this in the international context, the scope and content of possible scientific and technical exchanges, possible institutional arrangements and ways and means to enhance international cooperation, financial arrangements, promising scientific areas to consider, reporting review and administrative procedures, safeguards and limitations, the relationship between Article X and other Articles of the convention and the role of Article X within a compliance assurance regime.

See "An Overview of the Biological Weapons Convention: Progress and Prospects"

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## ONGOING AND RECENT ACTIVITIES

### Information Acquisition and Processing

- Documents in the area of treaty and materials properties were added to the CBIAC collection during the first quarter, FY 96.

### Inquiry and Referral Services

- Last quarter the CBIAC received 163 inquiries. Over 15% of the inquiries for last quarter were related to combat effectiveness and warning and identification.

### Products

- The Worldwide Chemical Detection Equipment Handbook is now available. See Special Offer on page 15.
- New Standard Bibliographies on Demilitarization topics are now available. See page 8 for details.

### Technical Area Tasks (TATs)

- Since the last newsletter, effort was added to six ongoing tasks and three tasks have been completed. As of 29 December, 65 TATs have been awarded and work has been added to 34 tasks. Total value of TATs awarded under our new contract is over 14.7 million dollars. The chart shows the distribution of TAT sponsors. One TAT under the old contract was completed.

- Do not hesitate to contact Judy Shetterly at the CBIAC (410-676-9030) if you would like further information on a CBIAC TAT. In order for us to help you most efficiently, please furnish the Government Contract Number you are working on (if any), the



reason(s) you want the information, and your company address and phone number. We need this information in order to obtain release of information from the TAT sponsor.

### Completed:

Task	Description/Sponsor
2	Evaluate the Aerosol Protection Provided by Candidate JSLIST Garment Designs and Fire Fighter's Ensembles USAF/HSC
5	Evaluate Previous Logistics Supportability and MANPRINT Approaches for Smoke Grenade Launcher Programs to Determine the Most Effective Concepts for Deployment of LVOSS USA/ERDEC
51	Determine the Quantitative and Qualitative Biochemical Make-up of Selected Organisms USA/ERDEC

### Underway:

Task	Description/Sponsor
------	---------------------

No new tasks awarded.

## CBIAC STATISTICS (First Quarter, FY 96)

Total CBIAC documents accessible through DTIC DROLS: 6,733

Shared<sup>1</sup>: 3,656 Unique<sup>2</sup>: 3,077

Total documents added to the CBIAC BD during First Quarter, FY96: 192

Total document citations available through the CBIAC BD: 45,398

Total documents on site: 23,910

Total inquiries received: 163

Technical: 38  
Informational: 45  
Bibliographic: 74  
Referral: 6

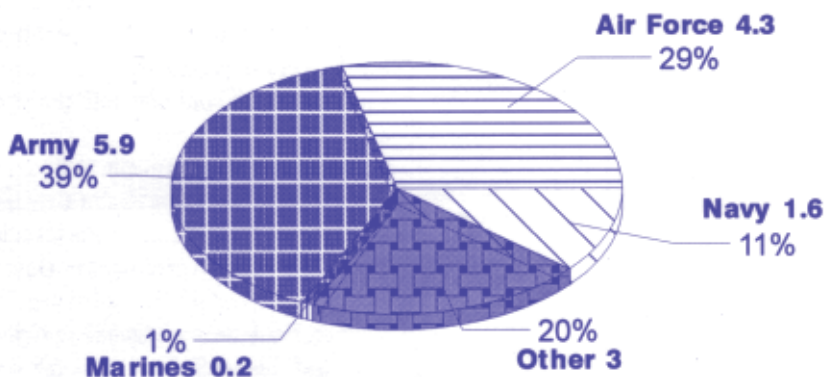
Total TATs awarded since contract initiation: 65

Completed: 5  
Ongoing: 60

Total newsletter subscribers: 2,218

1 Existing DTIC records appended with CBIAC terms  
2 New DTIC records created by the CBIAC

## TECHNICAL AREA TASKS (Millions)



## CB NEWS EXCERPTS

In order for the CBIAC to inform its readers of recent Chemical/Biological Defense activity throughout the United States and around the world, we have compiled a list of related CB news articles and have taken excerpts from them to create brief overviews. Please note that the CBIAC does not provide secondary distribution of articles. We can, however, provide direction on where to find an article of interest.



<http://www.opcw.nl/ptshome.htm>, 1995 November 28. According to the Provisional Technical Secretariat of the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons (PTS-OPCW), the latest number of Chemical Weapons Convention (CWC) ratifiers is now at 44. Of the 160 signatories, an additional 21 are required to ratify before the CWC enters into force. The ten most recent ratifiers of the CWC are Poland, Ecuador, South Africa, Japan, Canada, Argentina, Slovak Republic, El Salvador, Georgia and Namibia.

Hitchens, Theresa & Holzer, Robert. Marines Chief Plans Bio-Chem Unit: Envisions All-Service Team as Primary Response to Terrorist Attacks, *Defense News*, 1995 August 27. General Charles Krulak, Marine Corps Commandant, has proposed establishing a Bio-Chem Unit which would entail development of doctrine, mission, organization, tactics, techniques, and procedures; Krulak has set 1 February 1996 as a target date. This initiative by the Marines in Quantico, VA will not conflict with activities in Tampa, FL by the U. S. Special Operations Command, which has been tasked to develop pre-emptive ways of dealing with chemical or biological attacks. Larry Seaquist, a former Navy captain who was key in the development of the Pentagon's overall counterproliferation strategy, commented that the Marine effort would contribute to counterproliferation by "lowering the value" of weapons of mass destruction.

<http://solar.rtd.utk.edu/friends/health/proj/proj0114.htm>, 1995 June 16. Professor Lev A. Fedorov is President of the Union for Chemical Safety (Russia), organized at the first meeting on 15 October 93. Their project goals include: (a) to rehabilitate the many regions destroyed by the process of preparing for chemical war; (b) to help people suffering from the consequences of the production, testing, and disposal/stockpiling of chemical weapons; (c) the destruction of chemical weapons, and (d) the conversion of the chemical weapons industry. Fedorov has published two books, one entitled *Chemical Weapons in Russia: History, Ecology, and Politics* (1994) and another entitled *Dioxins as Ecological Danger* (1993).

Sidell Retires After Distinguished Career, *APG News*, 1995 November 1. The retirement of Dr. Frederick R. Sidell, Chief of the Chemical Casualty Care Office was announced in local news. Dr. Sidell retires from the Medical Research Institute of Chemical Defense where he served 31 years in the field of medical management of chemical casualties and is internationally recognized as an expert on the medical effects of chemical warfare agents. He developed the Management of Chemical and Biological Casualties course, which provides instruction to U.S., allied and military physicians, nurses and medical NCOs, and civilian emergency personnel.

[gopher://gopher.undp.org:70/11/undocs/scd/scouncil](http://gopher://gopher.undp.org:70/11/undocs/scd/scouncil), 1995 November 22. The U.N. Security Council has decided to lift the arms embargo against former Yugoslavia. A press release of resolution #1022 summarized the unanimous decision for phased lifting of the embargo; the vote was 14 in favor, none against and one (Russian Federation) abstention. The prohibition on the delivery of weapons and military equipment will continue until the first 90 days following the submission of a report that the Republic of Bosnia and Herzegovina, the Republic of Croatia and the Federal Republic of Yugoslavia have signed the Peace Agreement in Dayton, OH.

Walker, Paulette V. Monitor to Offer Watchful Eye on Soldier's Health, *Army Times*, 1995 October 23. A medical sensor for soldiers is in development that will be able to electronically send physiological

information to a command and medic center. Sarcos, the research company that designed the device, says the monitor consists of two parts: a chest strap and a monitor pack, both wireless and with individually coded information on the soldier. The prototype is available this winter, but testing of the device is planned for early in 1996 on soldiers in Ranger training at Eglin Air Force Base in Florida.

Ryan, Laura L. New Unit Offers Advice, Expertise, *APG News*, 1995 November 8. A new unit at Aberdeen Proving Ground, the 520th Theater Army Medical Laboratory (TAML), offers support to the 44th Medical Brigade, XVIII Airborne Corps. TAML is an Army Forces Command medical surveillance unit which deploys with troops during war to identify and evaluate health hazards to assess nuclear, biological and chemical health threats as well as occupational health, endemic disease and environmental threats. TAML has 44 enlisted personnel, and Maj. Beau J. Freund as their executive officer. Many of the assigned soldiers will undergo technical training by organizations such as the Center for Health Promotion and Preventive Medicine (CHPPM), the Medical Research Institute of Infectious Diseases (MRIID), and the Medical Research Institute of Chemical Defense (MRICD).

### To Place an Ad in CBIAC News...

The CBIAC is now accepting paid advertisements from the chemical and biological defense community. Our general policy is to include ads pertaining to scientific and engineering equipment and services and other commodities generally related to the mission and scope of the CBIAC. All advertisements are subject to approval by our COTR before being printed. If you would like to run an ad, please contact Judith M. Shetterly for additional information on price and policy.



## MEETING HIGHLIGHTS

### Worldwide Chemical Conference XIV and NBC Operations Symposium

The fourteenth Worldwide Chemical Conference and the American Defense Preparedness Association's (ADPA) NBC Operations Symposium was held October 25 to 27, 1995 at the U.S. Army Chemical School, Fort McClellan, Alabama. The theme of this meeting was "Chemical Corps-Force XXI Joint NBC Defense Readiness." Force XXI will be a total redesign of the entire Army, electronically linked, integrated and streamlined, all built around information. The meeting focused on measures needed to ensure that NBC defense is linked to the changes that are occurring as we move toward the 21st century. Highlights of the meeting were presentations by Brigadier General Ralph Wooten on the Chemical Corps Vision for the 21st Century, the Chemical Warfare Convention by Dr. Robert Mikulak, Implementation of the Chemical Materiel Destruction Program by Major General Robert D. Orton, Overview of the Joint Program Office by Brigadier General Walter Busbee, Joint NBC Defense Program Management by Dr. Ted Prociw, and Joint Service Materiel Group-Oversight and Management of the Joint Service NBC Defense Program by Major General George Friel. Held in conjunction with the symposium was the Regimental Review and Retirement of Brigadier General Walter Busbee. This ceremony was most impressive and the words and emotions shared by General Busbee were inspiring.



## THE EDGEWOOD ENTERPRISE



In the feature article of the 1995 September issue of the Edgewood Quarterly, the structure, mission, purpose and progress of a strategic effort known as The Edgewood Enterprise is discussed. Mr. Joseph J. Vervier, Technical Director of the Edgewood Research, Development and Engineering Center (Edgewood RDEC) is also the manager of the Nuclear, Biological and Chemical (NBC) Research, Development and Acquisition (RDA) Business Area for the U.S. Army Chemical and Biological Defense Command (CBDCOM). As the Business Area Manager of CBDCOM NBC RDA, Mr. Vervier has decided to include his customers and suppliers into the structure and processes owned by Edgewood RDEC, thus creating The Edgewood Enterprise. This creative strategy has introduced "a new way of doing business." At this time, The Edgewood Enterprise consists of Edgewood RDEC, the Office of the Project Manager for NBC Defense Systems, the Office of the Product Manager for Smoke/Obscurants, the Office of the Program Director for Biological Defense Systems, and business management, legal, and procurement elements of CBDCOM. According to the Edgewood Quarterly, The Edgewood Enterprise has two missions:

- "To provide U.S. forces with the capability to survive and sustain mission operations on a twenty-first century digitized battlefield through application of NBC defense, obscuration, flame, and non-lethal weapons science and technology, engineering, products and life cycle support services."
- "To leverage core capabilities by providing products and services to vital national programs such as treaty verification and environmental

remediation in partnership with government, academic and private organizations."

The Edgewood Enterprise is committed to work in seven major business areas:

- NBC Reconnaissance, Detection and Identification
- NBC Individual Protection
- NBC Collective Protection
- NBC Decontamination
- Chemical Weapons Treaty Verification Technology
- Smoke/Obscurants & Target Defeating Materials
- Customized Services in support of national interest such as environmental restoration, toxicology studies, and other areas.

"Business as usual" is not something you will hear in relation to The Edgewood Enterprise. As the nation's leading resource for research, development, and engineering products and services for maintaining global superiority in NBC defense and related technologies, The Edgewood Enterprise is uniquely qualified to meet the needs of its customers. The Edgewood Quarterly reports that "The Edgewood Enterprise is an agile entity that has broken the mold of its previous bureaucratic style and will continuously improve its processes and organization."

### Maryland



## CALENDAR OF EVENTS

The CBIAC highlights conferences, symposia, meetings, exhibitions and workshops of interest to the CB community in every issue of our newsletter. We invite CBIAC users to submit information on various events to the attention of Elizabeth L. Hamm. She may be reached at the address, phone and fax numbers on the back page of this newsletter, or via the internet: [hamme@battelle.org](mailto:hamme@battelle.org). Due to space limitations, the CBIAC will accept submissions on a first-come, first-served basis and reserves the right to reject submissions.

### 1996 MEETINGS

Date/Name/Location	Contact(s)	Date/Name/Location	Contact(s)
<b>Jan TBD, 1996</b>		<b>June 24-28, 1996</b>	
Association of the United States Army (AUSA) 8th Annual Winter Exposition	Association of the United States Army (AUSA) 2425 Wilson Blvd. Arlington, VA 22201 Tel: (703) 841-4300, Ext 660 Fax: (703) 252-9039	The First U.S.-Japan Symposium on Advances in NDT	ASNT Attn: Stan Rokhlin P.O. Box 28518 Columbus, OH 43228-0518 Fax: (614) 274-6899
Orlando, FL		Turtle Bay Hilton Kahuku, Oahu, HI	
<b>Jan 16-18, 1996</b>		<b>June 24-29, 1996</b>	
Hazardous Material and Waste Management Conference and Exhibition	American Defense Preparedness Association (ADPA) 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885	Eurosatory '96 Land Defence Equipment	GICAT Comissariat Générale Eurosatory 64 rue Ranelagh 75016 Paris France Tel: 33 1 42 30 71 11 Fax: 33 1 42 30 70 88
Radisson Plaza Hotel Alexandria, VA		Paris-Le Bourget, FRANCE	
<b>Mar 26-28, 1996</b>		<b>Sept, 1996</b>	
7th Annual TARDEC Ground Vehicle Survivability Symposium	American Defense Preparedness Association (ADPA) 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885	Night Vision '96	Shephard Conferences 111 High Street Burnham, Bucks SL1 7JZ United Kingdom Tel: 44 628 604746 Fax: 44 628 664075
Naval Postgraduate School Monterey, CA		London, UNITED KINGDOM	
<b>May 13-17, 1996</b>		<b>Oct, 1996</b>	
Global Demilitarization Symposium & Exhibition	American Defence Preparedness Association (ADPA) 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885	AUSA Annual Meeting	Association of the United States Army (AUSA) 2425 Wilson Blvd. Arlington, VA 22201 Tel: (703) 841-4300, Ext. 660 Fax: (703) 252-9039
John Ascuaga's Nugget Reno, NV		Sheraton Washington and Omni Shoreham Hotels Washington, D.C.	

## NEWLY RELEASED CBIAC BIBLIOGRAPHIES ON DEMILITARIZATION

<u>Product Number</u>	<u>Title/Limitation</u>	<u>Price</u>	<u>Availability/Media*</u>
BIB-96-09	<b>Chemical Demilitarization/</b> U.S. Government Agencies and their Contractors	\$40.00	CBIAC/  or 
BIB-96-10	<b>Bioremediation as a Demilitarization Technology/</b> U.S. Government Agencies and their Contractors	\$ 5.00	CBIAC/  or 
BIB-96-11	<b>Alternative Technologies for Demilitarization/</b> U.S. Government Agencies and their Contractors	\$15.00	CBIAC/  or 
BIB-96-12	<b>Incineration as a Demilitarization Technology/</b> U.S. Government Agencies and their Contractors	\$15.00	CBIAC/  or 
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For information on ordering the above bibliographies please contact Judith M. Shetterly at (410) 676-9030



## TERRORISM



**Terrorism.** The mere mention of the word produces a high-stress reaction in most people. Terrorism, combined with chemical, biological, or nuclear agents (weapons of mass destruction) can truly create fear. The likelihood of a terrorist attack occurring in the United States was discussed in an article that appeared in *The Sun*, 1 November 1995, entitled, "Terrorist Attacks In The U.S. Expected," referencing the 20 March 1995 nerve gas attack in Tokyo's subway which killed 12 people and injured more than 5,000, as an incident which heightened people's awareness of the potential magnitude of future threats.

Present-day newspapers report terrorist activities; however, for a terrorist to make headlines, the incident has to be of an extreme nature. Now that this extreme limit has been pushed and the boundary crossed by the Tokyo incident, which organizations coordinate the response to terrorist attack within the United States (U.S.)? Local governments talk of forming "Strike Teams" that would respond to such incidents using local emergency personnel. But without formal training in the proper handling or decontamination of chemical, biological, or nuclear agents, this situation could erupt into an even larger disaster.

When the U.S. faces this type of heinous crime, what is involved in the "worst-case" planning? According to *The Ultimate Nightmare*, an article by John Roos in the *Armed Forces Journal International*, October 1995, the Department of Energy's (DoE's) Nuclear Emergency Search Team (NEST) would be activated in the event of a nuclear or radiological accident. Lisa Gordon-Hagerty, director of DoE's office of emergency response for defense programs, supervises NEST activities.

Approximately 95% of the NEST team members that respond to nuclear or radiological emergencies are volunteers. These DoE employees or DoE contractors are not paid to add this to their to-do list, yet they provide a well coordinated approach to the problem. Skills for handling emergencies are sharpened during joint activities with other agencies.

Additionally, the NEST team members/laboratories pose their best instrumentation against one another in an attempt to develop a high capability of analyzing and disabling devices.

What happens when a terrorist strikes with a chemical or biological agent that has been prepared and delivered without much difficulty? Who responds to this incident? Roos reports that the first line of defense is the Federal Bureau of Investigation (FBI). The FBI responds to all domestic threats including chemical, biological, and nuclear threats/accidents. If the FBI and associated agencies offering additional capabilities are unable to respond sufficiently to prevent the incident, requests from civilian authorities' for military assistance will end up at the Army's 150-member Technical Escort Unit (TEU). The actual chain of command for military assistance in response to a chemical or biological incident is to go from local to state authorities, then to the Federal Emergency Management Agency (FEMA), to the National Response Center, then to the Department of Defense (DoD), and on to the TEU.

The TEU would be dispatched from either the U.S. Army's Chemical and Biological Defense Command at Aberdeen Proving Ground, MD, or from one of the two detachment locations in Dugway Proving Grounds, UT, or Pine Bluff, AR. The TEU contains the expertise to deal with a chemical or biological incident without incurring additional problems. They also have the expertise in coordinating with the FBI and other federal and international agencies. TEU trains with the state and federal agencies so that an 8 to 10 member team is ready to respond to an incident within 4 hours.

Yet, even with this preparation, there are problems that have not been addressed. As stated in the *Armed Forces Journal International* article, "...both the NEST and TEU are organized and equipped only to detect, contain, limit the damage from, and clean up after an attack has occurred. Neither organization routinely trains with, or is even linked to a standing force or other response team that includes the highly specialized medical, security, and other personnel and materiel assets that would be in immediate demand at the scene of a terrorist attack involving weapons of mass destruction."

## Planning a Conference/Symposium????



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We offer a dedicated staff of technical and administrative personnel trained to support conferences, symposia, and small working group meetings in all areas of Chemical Warfare/Chemical and Biological Defense. Currently the CBIAC supports several annual conferences, workshops, and symposia, both classified and unclassified, in the U.S. and abroad. The CBIAC offers the following support:

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Janice Rhodes  
Conference Coordinator  
Tel: (410) 569-0200  
Fax: (410) 569-0588

E-Mail: [rhodesj@battelle.org](mailto:rhodesj@battelle.org)



## A READER WRITES...



This article reflects information provided by one of our readers. DoD, DTIC, and the CBIAC are not responsible for the accuracy of this submission.

### Pleasingly Destructive Radicals

Maybe we don't sufficiently appreciate our radical friends out there. I mean hydroxyl radicals, represented by chemists as HO• (a hydrogen atom, an oxygen atom, and that very important dot), which are generated naturally by the action of sunlight on oxygen and water vapor in the atmosphere. Out in the sunshine, there are about 30 million hydroxyl radicals per cubic inch.

What's friendly about hydroxyl radicals is that they aggressively attack organic molecules in the air. Their aggressive nature arises from that dot, representing an unpaired electron. Electrons like to be paired; an unpaired electron is aggressively dissatisfied. Rates of hydroxyl radical attack on numerous vaporized organic compounds have been measured. Among the substances studied are triethyl phosphate and diethyl sulfide; although comparatively innocuous, they can be considered surrogates for nerve agent sarin and "mustard" gas, respectively. The measured rates indicate rapid destruction of minuscule traces of these agents that may be in the atmosphere. The time required to destroy half of them is 2.3 hours for the sarin surrogate (triethyl phosphate) and 8.3 hours for the "mustard" surrogate (diethyl sulfide): they are reduced to less than 1% of the original amount in two days to a week, respectively.

Now, if the "half lives" for the real agents are like those for the surrogates, the implication is that small, accidental releases of the agents are rapidly destroyed by natural processes. They do not accumulate as suspected by some citizens, who fear detrimental long term health effects. That is comforting, but hydroxyl radicals would not be able to destroy any major release quickly enough to be safe.\*

Joseph F. Bunnett  
University of California  
Santa Cruz

\* This discussion is based on a report by a IUPAC Task Force, published in *Pure and Applied Chemistry*, 67, 841 (1995).

## "An Overview of the Biological Weapons Convention: Progress and Prospects"

Continued from Page 4

### OUTLOOK

What is the outlook for the future meetings of the Ad Hoc Group? There are many difficult issues which must be resolved before a protocol acceptable to the States Parties can be developed for presentation to the Fourth Revcon. Primary among them from the U.S. viewpoint are the purpose and effectiveness of the proposed protocol. It is an extremely complex task to define as well as distinguish between "treaty prohibited" and "permitted activities" with regard to the unique prohibitions of the BWC with a reasonable level of confidence. Determination of whether a violation of the BWC has occurred is dependent on intent as well as physical evidence. This statement does not imply that we are against strengthening the BWC but that the protocol developed must reflect what is both technically and politically feasible.

The Ad Hoc Group of Experts recognized the great difficulty in meeting this condition but "concluded that potential measures as identified and evaluated could be useful to varying degrees in enhancing confidence, through increased transparency, that states parties were fulfilling their obligations under the BWC." Further, "The group considered, from the scientific and technical standpoint, that some of the verification measures would contribute to strengthening the effectiveness and improve the implementation of the Convention."

Over the coming year, we hope that the Ad Hoc Group will move expeditiously to negotiate at least the principles of a legally binding protocol containing effective measures to strengthen the BWC in time to be considered at the review conference scheduled for 1996. The technical details can be placed in annexes which can be refined later through continuing negotiations. The finished protocol could then be adopted and signed at a subsequent BWC special conference.

There are many procedural as well as technical problems yet to be resolved before the protocol can be placed into effect.

Questions such as the number of ratifications required before entering into force, the earlier mentioned two-tier regime of obligations on states parties and the role of the existing CBM's in the future protocol are examples of the difficult negotiations which lie ahead.

With this in mind, the protocol and associated annexes which define the technical procedures and implementing processes will have to be approved by a consensus of participating states before these documents can be adopted by the BWC member states. In addition, if the protocol is to be a legally binding instrument on governments and commercial and industrial parties, it will have to be ratified by each State Party.

The United States is committed to strengthening the BWC as a critical element of the international norm prohibiting proliferation of weapons of mass destruction. The coming negotiations, due to the many problems mentioned earlier, will require considerable effort and persistence to bring the talks to a timely and successful conclusion.



Mr. Thomas R. Dashiell has over 35 years of experience in NBC defense. He served in the Office of the Director of Defense Research and Engineering as the Director of Environmental and Life Sciences in the Office of the Secretary of Defense. Mr. Dashiell now works as a consultant and is currently the Technical Advisor to the Arms Control and Disarmament Agency (ACDA).

### Editorials Welcomed!

If you would like to submit an editorial for publication in our next issue of the CBIAC Newsletter, please contact Mary Jo Waters at the CBIAC. For those interested in submitting editorials, we ask that you provide us with an electronic copy as well as a hard copy of your editorial.

## CBIAC USER SURVEY

Please help the CBIAC create products and services that meet the needs of the CB defense community by completing this survey. Your responses may be faxed or mailed to the attention of Mary Jo Waters, CBIAC. For an electronic version of this survey, send an E-mail message to [shetterj@battelle.org](mailto:shetterj@battelle.org) (Internet).

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Biological Agent Transport	5	4	3	2	1	N/A
Biological Agent/Weapon Effects - Environmental	5	4	3	2	1	N/A
Biological Agent/Weapon Effects - Medical	5	4	3	2	1	N/A
Biological Agent/Weapons Models	5	4	3	2	1	N/A
Chemical Weapons Treaty Technologies Reference Collection, Volume 1 - Bibliography	5	4	3	2	1	N/A
Chemical Weapons Treaty Technologies Reference Collection, Volume 2 - Keyword Index	5	4	3	2	1	N/A

#### Critical Reviews

A Critical Review of Nuclear, Biological and Chemical Contamination Survivability (NBCCS)	5	4	3	2	1	N/A
A Critical Review of Sources of Spectral Data for Militarily Significant Compounds	5	4	3	2	1	N/A

#### Handbooks and Databooks

Chemical Defense Materials Databook	5	4	3	2	1	N/A
Worldwide Chemical Detection Equipment Handbook	5	4	3	2	1	N/A
Worldwide NBC Mask Handbook	5	4	3	2	1	N/A

#### Proceedings

Proceedings of the CB Medical Treatment Symposium: An Exploration of Present Capabilities and Future Requirements for Chemical and Biological Medical Treatment	5	4	3	2	1	N/A
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#### State-of-the-Art Reports

Material Selection Guide Derived from the Material - Chemical Compatibility Database: Feasibility Based on Database and Predictive Model Evaluation	5	4	3	2	1	N/A
State-of-the-Art Report on Biodetection Technologies	5	4	3	2	1	N/A

### ❖ CURRENT AWARENESS ❖

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CBIAC Homepage [ <a href="http://www.battelle.org/cbiac/cbiachp.html">http://www.battelle.org/cbiac/cbiachp.html</a> ]	5	4	3	2	1	N/A
CBIAC Starter Kit	5	4	3	2	1	N/A
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Newsletter Quality	5	4	3	2	1	N/A
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Newsletter Topics	5	4	3	2	1	N/A
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Physiological and Psychological Effects of the Nuclear, Biological, and Chemical Environment and Sustained Operations on the Systems in Combat (P2NBC2)	5	4	3	2	1	N/A

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Inquiry Response Timeliness	5	4	3	2	1	N/A
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5. Would you like to be added to the CBIAC Newsletter mailing list?

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# TECHNOLOGY TRANSFER

This column serves the CB community by showcasing new technologies, by communicating industry needs and by providing sources of additional technology transfer information. This is the first in a series of articles extracted from **TECHNOLOGY EXCHANGE: A Guide to Successful Cooperative Research and Development Partnerships**. Edited by John Lesko and Michael Irish, this book presents "best practices" and "lessons learned" drawn from extensive analysis of successful joint ventures between the public and private sectors. The CBIAC Newsletter Staff invites feedback from its readers for this column. Please submit your comments to Don McGonigle ([mcgonigl@battelle.org](mailto:mcgonigl@battelle.org)).

## A New Paradigm

Back when plenty of Federal R&D and procurement dollars were available, any spin-off application of DoD technology was considered a "bonus," i.e., getting extra value from the R&D dollar by strengthening the civilian economy. Such technology transfer was a one-way flow from the defense technology and production base to the separate commercial technology and production base.

Now the concept of technology transfer is better represented as a two-way exchange of technology capabilities, opening the way for spin-on as well as spin-off applications. The goal is a seamless integration of military and commercial capabilities so we as a nation can maintain military capability and develop emerging technologies. In areas where military R&D has taken the lead, this technology must be transferred for two reasons: to afford the material that supports day-to-day operations, and to strengthen the domestic economic base.

There are only two areas where a separate military technology should be maintained: (1) technology that is unique to military application, and (2) technology deemed critically sensitive. This new paradigm of technology transfer is appropriate now since we deal with predominantly economic competition, because the military threat is diminished, less immediate, and more diverse.

## Tech Transfer: Is It Right for You?

From a business perspective, the environment for government/industry cooperative R&D has never been better. Whether you represent the interests of a private enterprise or a federal institution engaged in R&D activities, evolving market realities portend the need for a new approach to, or at least a fresh look at ways to achieve corporate goals for improved technology in a tighter, more competitive national and international market environment.

Faced with dramatic changes in mission and drastic cuts in resources on one hand, and ever increasing demands for leading edge technology in the programs that remain, the federal program director or technologist must look beyond the traditional defense contractor community and consider solutions that may be offered by the private sector. Similarly, pressures to reduce corporate R&D budgets make the commercial entrepreneur more inclined to investigate public sector possibilities for cooperative leveraging at least a portion of higher risk or costly early development work.

## Joint Strategic Planning

Innovations do not simply move from the shelves of federal labs to the shelves of the commercial market. Most require modifications, and even then there is no guarantee of success in the marketplace.

Therefore, for both government and industry practitioners, a technology investment strategy that recognizes the potential for technology transfer and cooperative R&D, and fully integrates this exchange into the organization's business process, can leverage scarce resources, broaden knowledge, and increase the chances for success.

The record so far in cooperative R&D and technology transfer has been spotty, and organizational support is still being built in many cases. Accomplishments generally are the result of the vision and dedication demonstrated by individuals who have taken the initiative and forged working partnerships while others are still considering ways to introduce themselves as potential partners.

Government and industry have significantly different views on program timeliness, marketing, access to technology, and

intellectual property rights. In future articles for this column, we will share these differences in perspective, explore the rationale for such differences, and identify the common ground upon which cooperative R&D successes have been built.

## TECHNOLOGY EXCHANGE

(ISBN 0-935470-86-7, Battelle Press, 178 pages with illustrations) is available for \$29.95. To order call 1-800-451-3543.

## "Thoughts From The Pentagon"

Continued from Page 2

## CW/BW ARMS CONTROL:

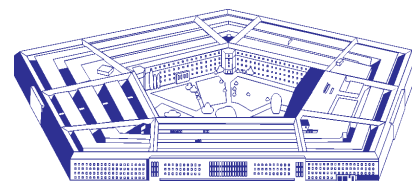


The Chemical Weapons Convention (CWC) is commonly recognized as the most intrusive arms control instrument ever negotiated. The CWC provides a rigorous verification regime, including mandatory declarations of chemical weapons and certain chemical-related activity, routine inspections to verify the declarations, and challenge inspections to resolve CWC compliance concerns.

The CWC was negotiated over a period of 24 years (1968-92) in Geneva and was opened for signature in Paris in 1993. To date, the CWC has been signed by 160 nations and ratified by 44 nations. Only 32 nations have not signed the CWC. Six months following ratification by 65 nations, the CWC will formally enter into force (EIF) worldwide. The international organization for CWC implementation will be located in The Hague, The Netherlands.

The Senate is now considering the CWC for ratification in the U.S. Many nations are watching the U.S. and are likely to ratify soon after we do. If U.S. ratification occurs before the end of 1995, worldwide EIF could follow by mid-1996.

Consistent with the requirements of DoD Directive 2060.1, our office is preparing for implementation/ compliance with the CWC by the Military Services and DoD Agencies and Activities.



## SELECTED TECHNICAL RESPONSES

This section of the newsletter contains recent technical inquiries and responses on subjects we feel are of interest to our users. The information presented has been edited to conserve space. If you would like further detail, please contact Steven Jones at the CBIAC and reference the number indicated in parentheses.

**Q:** What is anthrax and what is its effects upon the soldier wearing the M40 mask and Battle Dress Overgarment (BDO)? (96-0111)

**A:** Anthrax, once known as agent N, is the common name for *Bacillus anthracis*. It is an acutely infectious disease of warm-blooded animals (i.e., cattle and sheep) caused by a spore-forming bacterium. In its natural environment, anthrax is transmissible to man especially by working with livestock and the handling of infected products. Under these conditions between 15% to 20% of seriously infected persons will die. These figures will rise by a factor of at least two or three if it is a deliberately spread contagion.

Anthrax exposure is characterized by external ulcerating nodules or by lesions on the lungs. The lesions on the lungs are caused by inhalation and the mortality rate for pseudo spore inhalation, in most cases, exceeds 90%.

For the soldier in a contaminated environment wearing the M40 mask, protection is afforded by the particulate filter of the M40 mask. This particulate filter will prevent anthrax from breaking through.

For the soldier wearing the BDO, the outer fabric of the BDO provides the particulate barrier. No breakthrough is anticipated as long as the BDO is not torn or compromised in a similar fashion. However, a secondary threat exists during doffing of the BDO since

the dissemination of spores is a potential risk.

**Q:** What is the LCt50 for lewisite (L), CAS RN: 541-25-3; soman (GD), CAS RN: 96-64-0; and arsine (SA), CAS RN: 7784-42-1? (96-0100)

**A:** The LCt50's found in reference document CB-010785 are:

**L:** 1200-1500 mg-min/m3 (inhalation)

**GD:** 70 mg-min/m3 (inhalation) or 0.01 mg/kg

**SA:** 5000 mg-min/m3 (inhalation) or 2 mg/kg

### To Place an Ad in CBIAC News...

The CBIAC is now accepting paid advertisements from the chemical and biological defense community. Our general policy is to include ads pertaining to scientific and engineering equipment and services and other commodities generally related to the mission and scope of the CBIAC. All advertisements are subject to approval by our COTR before being printed. If you would like to run an ad, please contact Judith M. Shetterly for additional information on price and policy.

### LINK YOUR HOMEPAGE TO THE CBIAC!



If your organization works in CB Defense and would like us to provide our www homepage users with a link to your homepage, please e-mail Steven Jones (jones@battelle.org) a brief description of how your organization is involved or related to CB matters along with the URL (web address) for your homepage. The CBIAC will review all submissions and select those which are appropriate. You will be notified of our determination.

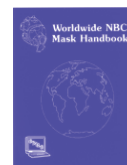
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Dynamation Research Inc.  
2301 Pontius Avenue  
Los Angeles, CA 90064  
\$38,422. 12 October 1995  
SP0450-95-C-1541/  
SP0450-95-R-2721
- ERDEC Design, Development, and Independent Verification and Validation Services.**  
MTA, Inc.  
688 Discovery Drive  
Huntsville, AL 35806  
\$48,810. 28 September 1995
- Chemistry Support Services for the Environmental Toxicology Program.**  
(a) Battelle Memorial Institute  
505 King Ave.  
Columbus, OH 43201  
\$14,806,137. 30 September 1995  
  
(b) Research Triangle Institute  
P. O. Box 12194  
Research Triangle Park, NC 27709  
\$12,988,972. 30 September 1995
- M48A1 Filter.**  
All-Bann Enterprises, Inc.  
2727 Coronado St.  
Anaheim, CA 92806-2401  
\$339,000. 20 October 1995
- Defense Conversion in the Ukraine.**  
(a) Combustion Engineering Inc.  
1000 Prospect Hill Rd.  
Windsor, CT 06095  
\$4,792,836. 27 October 1995  
  
(b) American Industrial Development Corp.  
368 Hillside Avenue  
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\$3,233,195. 27 October 1995  
  
(c) Die Casters International Inc.  
One Spruce Terrace  
Wayne, NJ  
\$4,100,427. 27 October 1995
- Transition of a Combined Toxic Gas Lethality Model to an Injury Model.**  
JAYCOR  
9775 Towne Centre Drive  
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San Diego, CA 92121  
\$806,502. 15 November 1995
- Improved Lightweight Standoff Chemical Agent Detection Sensor (I-LSCADS)**  
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The CBIAC NEWSLETTER is a quarterly publication of the Chemical Warfare/Chemical and Biological Defense Information Analysis Center (CBIAC). The CBIAC is a Department of Defense (DoD) Information Analysis Center (IAC), administratively managed by the Defense Technical Information Center (DTIC) under the DoD IAC Program. The Contracting Officer's Technical Representative is Mr. Joseph Williams. He may be reached at:

Technical Director, ERDEC  
Attn: SCBRD-RTA (Joseph Williams)  
APG-EA, MD 21010-5423  
Tel: (410) 671-4878 Fax: (410) 671-2649  
DSN: 584-4878  
Internet: jdwillia@apgea.army.mil.

Government agencies and private industry under contract to the Department of Defense can contact the CBIAC which serves as a center for the acquisition, compilation, analysis and dissemination of information relevant to chemical warfare and chemical and biological defense technology. The CBIAC staff is available to answer questions from 7:00 a.m. to 5:00 p.m, EST.

The CBIAC is located in Building E3330, Aberdeen Proving Ground-Edgewood Area, Maryland 21010.

The CBIAC mailing address is shown below:

CBIAC  
P.O. Box 196  
Gunpowder Branch APG, MD 21010-0196  
Tel: (410) 676-9030 Fax: (410) 676-9703

### CBIAC STAFF

Fran T. Crimmins (crimmins@battelle.org)	Director and Manager, Technical Area Tasks (TATs)
Nancy R. Brletich (brleticn@battelle.org)	Deputy Director and Manager, Core Program
Donald B. McGonigle (mcgonigl@battelle.org)	Manager, Information Support Systems
Jeanne M. Rosser (rosserj@battelle.org)	Manager, Information Collection and Processing
Steven A. Jones (joness@battelle.org)	Manager, Inquiry and Referral Service
Mary Jo Waters (watersm@battelle.org)	Newsletter Editor
Judith M. Shetterly (shetterj@battelle.org)	Newsletter Circulation

### NEWSLETTER STAFF

Nancy R. Brletich	Advisor, Product Announcements & User Survey
Fran T. Crimmins	Advisor, Meeting Highlights & TAT Focus
Sallie A. Dawson	CB News Excerpts, Contract Awards, Edgewood Enterprise and Recent Acquisitions
Elizabeth L. Hamm	Calendar of Events
Steven A. Jones	Selected Technical Responses
Donald B. McGonigle	Meeting Highlights and Technology Transfer
Mary Frances Tracy	Selected Technical Responses and Terrorism
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P.O. Box 196  
Gunpowder Branch APG, MD 21010-0196

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